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実用新案法第11条第1項において準用する特許法第30条第1項適用申請有り 平成12年6月28日 株式会社エヌ・ティ・ティエムイー四国の「システムラック総合カタログ」に発表

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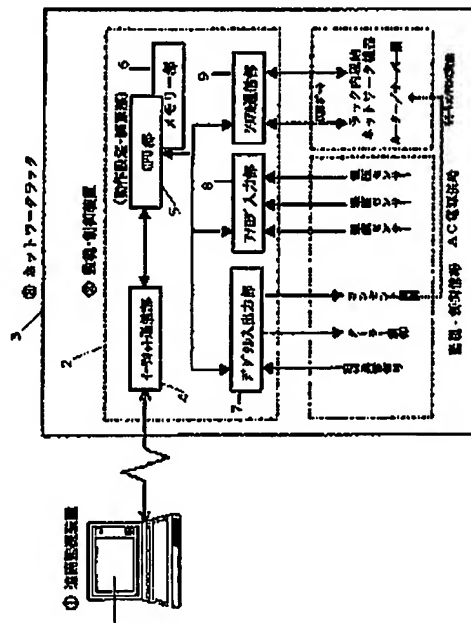
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(54) 考案の名称 ネットワークラック内の監視制御装置

(57) 要約

【課題】ラックに収納されたルーターやサーバー等の電子機器を監視制御する場合に、遠隔地から端末機を操作することにより、ラック内の環境を監視し、電子機器の動作を制御することを目的とする監視制御装置を提供する。

【解決手段】イーサネット通信部4、動作設定演算部となるCPU部5及びその機能を行うに必要なメモリー部6、デジタル入出力部7、アナログ入力部8、シリアル通信部9から構成され、ネットワークラック3内に収納された電子機器類の動作及び最良の環境を維持するように監視制御する事が出来るようにしたことを特徴とする監視制御装置。



Detailed explanation of a design]

[0001]

[The technical field to which a design belongs] The monitor and control equipment in the network rack concerning this design aims at carrying out supervisory control of the network electronic equipment contained in the rack by remote operation in order to maintain actuation of a router or servers, while it is installed in the interior of an electronic equipment cabinet (this is called rack below.) and maintains the environment of the temperature of a rack, or humidity good.

[0002]

[Description of the Prior Art] In order that the conventional monitor and control equipment might control the environment of the electronic equipment contained in the rack, controlling the temperature and humidity in a rack by thermoregulators, such as a fan and a cooler, was performed. However, a Prior art is operated by remote control, in order to keep the environment in a rack good and to maintain it. Although temporary keyboard grabbing was able to be performed via remote supervisory equipment from the remote place and the system was able to be restored as treatment like software when the system down of electronic equipment had occurred within a rack, the function which reboots the power source for hard restoration to coincidence was not equipped.

The environment generated within a network rack and the operating state of an equipment have been sensed by the sensor, and although there was a function which supervises real time, such as temperature, humidity, an electrical potential difference, and a current, as surveillance intelligence in a network rack, there was no function to perform a mail transfer to personal digital assistant receivers, such as eye mode, through the Internet as a means of the notice of abnormalities of surveillance intelligence to coincidence.

[0003]

[Problem(s) to be Solved by the Device] When carrying out supervisory control of the electronic equipment contained by the rack, such as a router and a server The network device contained in the rack by operating a terminal from a remote place is operated. The abnormality signal which detects the environment in a rack while operating a router and servers' electronic equipment, Control the cooler which adjusts temperature and humidity and the plug socket which connects the power source which can be supplied to a router, a server, etc. is controlled. By operating actuation of the electronic equipment which supervised rack milieu interne, such as a power source in a rack, temperature, and humidity, maintained good, performed the mail transfer to personal digital assistant receivers, such as eye mode, through the Internet as a means of the notice of abnormalities to coincidence, and were contained in the list by remote control It is going to offer the monitor and control equipment aiming at maintaining actuation and the good environment of electronic equipment.

[0004]

[Means for Solving the Problem] The monitor and control equipment in the network rack concerning this design The memory section required to perform the CPU section used as the Ethernet communications department and setting operation part of operation, and its function, It consists of the digital-input/output section, the analog input section, and the serial communication section. It is the monitor and control equipment which can supervise and maintain actuation and the good environment of the electronic equipment contained in the network rack, and is characterized by enabling it to perform a mail transfer at personal digital assistant receivers, such as eye mode, through the Internet as a means of the notice of abnormalities to coincidence.

[0005]

[The gestalt of implementation of a design] It is the description that the monitor and control equipment of this example is equipped with the function indicated below for the purpose of the technical thought of this design carrying out supervisory control of a setup and environment of the electronic equipment in a network rack in an example.

[0006] In order to operate the electronic equipment contained in the rack through the Ethernet communications department from remote supervisory equipment by remote control, it has the serial communication section which enabled it to connect a router and servers' electronic equipment. For this

reason, it enables it to operate the network device contained in the rack by operating a terminal from a remote place.

[0007] The environment in a rack was detected by the sensor, and the cooler which adjusts an abnormality signal, and temperature and humidity was controlled, and it has the digital-input/output section which controls the plug socket which connects the power source supplied to the router contained in the rack, a server, etc. [0008] It has the analog input section which can connect the various sensors which sense rack milieu interne, such as a power source in a rack, temperature, and humidity.

[0009] When the signal from the digital input section and the analog input section is judged by CPU and it is judged as an unusual signal, a mail transfer is performed to personal digital assistant receivers, such as eye mode, through the Ethernet communications department as a means to notify the abnormality signal.

[0010]

[Example] The accompanying drawing is illustrating about the example of the monitor and control equipment in the network rack concerning this design. The rear view of the monitor and control equipment which the front view of the monitor and control equipment with which functional block diagram drawing 2 drawing 1 indicates the concept of the monitor and control equipment to be has the detail functional block diagram of the monitor and control equipment with an LED lamp, and drawing 3 has a display window, and drawing 4 show arrangement of components, such as an electric power switch, a fuse-holder, AC inlet, an analog input connector, a digital-input/output terminal, and various ports, and drawing 5 swerve, and swerve and show the typical system configuration Fig. showing the example of use of the monitor and control equipment installed in the rack.

[0011] When carrying out supervisory control of the electronic equipment contained by the example network rack 3, such as a router and a server, it has the Ethernet communications department 4 and enables it to operate the network device contained in the rack 3 connected to the serial communication section 9 by remote control through the setting operation CPU section 5 of operation and the memory section 6 by operating a terminal 1 from the remote supervisory equipment put on the remote place.

[0012] In order to operate the electronic equipment contained in the rack through the Ethernet communications department from remote supervisory equipment by remote control, it has the serial communication section 9 which enabled it to connect a router and servers' electronic equipment. It connects with the COM port of a router or servers at the serial communication section 9.

[0013] It has the digital-input/output section 7 which controls the cooler which adjusts the abnormality signal which detects the abnormalities of the environment in the rack detected by the thermo sensor or the humidity sensor, and temperature and humidity, and controls the plug socket which performs the enter end of the power source connected to electronic equipment.

[0014] It has the various sensors which sense rack milieu interne, such as a power source in a rack, temperature, and humidity, and sensors, such as these thermo sensors, a humidity sensor, and a voltage sensor, are connected to the analog input section 8 in order to supervise the rack milieu interne.

[0015] As shown in the drawing 3 front view and the drawing 4 rear view, components, such as various ports of the LED lamp display 10, an electric power switch, a fuse-holder, AC inlet, an analog input connector, a digital-input/output connector, and the port 11, COM port 12 and the Ethernet port 13 for a test, are arranged, and the example of this design is synthetically equipped with the equipment which carries out supervisory control of actuation and the environment of the aforementioned electronic equipment. Table 1 shows the diagnostic table of the foreground color of a monitor-and-control-equipment LED lamp.

[Table 1]

印刷表示	LED 表示	装置の状態
POWER	赤 緑	電源投入時に点灯 (システム初期化) 通常動作中
LINK	緑 消灯	Ethernet LINK している Ethernet LINK していない
TXD	緑 消灯	Ethernet パケット送信 Ethernet パケット送信無し
TXD	緑 消灯	Ethernet パケット受信 Ethernet パケット受信無し
COLLISION	赤 消灯	Ethernet コリジョン発生 Ethernet コリジョン無し
ALARM	赤 消灯	点灯イベント発生 (異常定義任意に可飽) 消灯イベント発生

[0016] Even if this design is the place distant distantly [ rack / network ], it prepares the environment of a network rack simply by operating the keyboard of the terminal of remote supervisory equipment, maintains actuation of electronic equipment, prepares the best environment where electronic equipment operates, maintains the good environment, and prevents the system down of electronic equipment. Moreover, the electronic equipment contained in the rack is operated from a remote place, and it enables it to perform both hard restoration actuation like software for the device which carried out the system down.

[0017]

[Effect of the Device] The effectiveness of this design does the effectiveness of a publication so next by the configuration according to claim 1.

[0018] By actuation of the terminal of the remote-supervisory-control equipment installed in a remote place, since this design maintains actuation and a good environment by setting actuation of the electronic equipment in a network rack, supervisory control of it can be carried out from the keyboard of a terminal. On general-purpose WEB browsers (IE etc.), the abnormality information which supervised real time of temperature, humidity, and an electrical potential difference by remote operation, and was judged by CPU as surveillance intelligence in a network rack can be disseminated to personal digital assistant receivers, such as eye mode, through the Internet.

[0019] Since this monitor and control equipment can operate the keyboard of a terminal from a remote place by connecting with the COM port of the monitor and control equipment when carrying out supervisory control of the electronic equipment contained in the rack, such as a router and a server Since it can have a system restoration actuation function, a router and servers' electronic equipment are operated on real time on-line, and it enables it to maintain actuation the same [ \*\* ] with operating the keyboard of the network device contained in the rack.

[0020] It enables it to control the environmental temperature in a network rack by the electronic equipment itself to homogeneity independently with the parameter beforehand set up by the remote control. By connecting Rhine to a digital-input/output section connector, the abnormality signal which detects the environment in a rack is inputted, this can be controlled by connecting the cooler for adjusting temperature and humidity, and plug socket control for having entered and carrying out the power source of devices, such as a router and a server, can be carried out.

[0021] Since this design can supervise the operating status of the contained network device and can perform the enter end of a compulsory power source to a plug socket control output according to concomitant use with the aforementioned supervisor, it can perform the first-aid treatment of a system down immediately from remoteness on-line to a network device. Therefore, even if a system down arises within the network rack of a remote place, a burden which dispatches a staff at night is mitigable.

[0022] While the supervisory-control information in a network rack is displayed on a graphic screen by the supervisor of dedication and being able to perform an abnormality display and an abnormality preliminary announcement display as a control action display and surveillance intelligence, mail of abnormality information can also be transmitted to personal digital assistant receivers, such as eye mode, through the Internet.

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[Translation done.]

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TECHNICAL FIELD

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[The technical field to which a design belongs] The monitor and control equipment in the network rack concerning this design aims at carrying out supervisory control of the network electronic equipment contained in the rack by remote operation in order to maintain actuation of a router or servers, while it is installed in the interior of an electronic equipment cabinet (this is called rack below.) and maintains the environment of the temperature of a rack, or humidity good.

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PRIOR ART

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[Description of the Prior Art] In order that the conventional monitor and control equipment might control the environment of the electronic equipment contained in the rack, controlling the temperature and humidity in a rack by thermoregulators, such as a fan and a cooler, was performed. However, a Prior art is operated by remote control, in order to keep the environment in a rack good and to maintain it. Although temporary keyboard grabbing was able to be performed via remote supervisory equipment from the remote place and the system was able to be restored as treatment like software when the system down of electronic equipment had occurred within a rack, the function which reboots the power source for hard restoration to coincidence was not equipped.

The environment generated within a network rack and the operating state of an equipment have been sensed by the sensor, and although there was a function which supervises real time, such as temperature, humidity, an electrical potential difference, and a current, as surveillance intelligence in a network rack, there was no function to perform a mail transfer to personal digital assistant receivers, such as eye mode, through the Internet as a means of the notice of abnormalities of surveillance intelligence to coincidence.

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EFFECT OF THE INVENTION

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[Effect of the Device] The effectiveness of this design does the effectiveness of a publication so next by the configuration according to claim 1.

[0018] By actuation of the terminal of the remote-supervisory-control equipment installed in a remote place, since this design maintains actuation and a good environment by setting actuation of the electronic equipment in a network rack, supervisory control of it can be carried out from the keyboard of a terminal. On general-purpose WEB browsers (IE etc.), the abnormality information which supervised real time of temperature, humidity, and an electrical potential difference by remote operation, and was judged by CPU as surveillance intelligence in a network rack can be disseminated to personal digital assistant receivers, such as eye mode, through the Internet.

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**TECHNICAL PROBLEM**

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[Problem(s) to be Solved by the Device] When carrying out supervisory control of the electronic equipment contained by the rack, such as a router and a server The network device contained in the rack by operating a terminal from a remote place is operated. The abnormality signal which detects the environment in a rack while operating a router and servers' electronic equipment, Control the cooler which adjusts temperature and humidity and the plug socket which connects the power source which can be supplied to a router, a server, etc. is controlled. By operating actuation of the electronic equipment which supervised rack milieu interne, such as a power source in a rack, temperature, and humidity, maintained good, performed the mail transfer to personal digital assistant receivers, such as eye mode, through the Internet as a means of the notice of abnormalities to coincidence, and were contained in the list by remote control It is going to offer the monitor and control equipment aiming at maintaining actuation and the good environment of electronic equipment.

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**MEANS**

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[Means for Solving the Problem] The monitor and control equipment in the network rack concerning this design The memory section required to perform the CPU section used as the Ethernet communications department and setting operation part of operation, and its function, It consists of the digital-input/output section, the analog input section, and the serial communication section. It is the monitor and control equipment which can supervise and maintain actuation and the good environment of the electronic equipment contained in the network rack, and is characterized by enabling it to perform a mail transfer at personal digital assistant receivers, such as eye mode, through the Internet as a means of the notice of abnormalities to coincidence.

[0005]

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[0009] When the signal from the digital input section and the analog input section is judged by CPU and it is judged as an unusual signal, a mail transfer is performed to personal digital assistant receivers, such as eye mode, through the Ethernet communications department as a means to notify the abnormality signal.

[0010]

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## EXAMPLE

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[Example] The accompanying drawing is illustrating about the example of the monitor and control equipment in the network rack concerning this design. The rear view of the monitor and control equipment which the front view of the monitor and control equipment with which functional block diagram drawing 2 drawing 1 indicates the concept of the monitor and control equipment to be has the detail functional block diagram of the monitor and control equipment with an LED lamp, and drawing 3 has a display window, and drawing 4 show arrangement of components, such as an electric power switch, a fuse-holder, AC inlet, an analog input connector, a digital-input/output terminal, and various ports, and drawing 5 swerve, and swerve and show the typical system configuration Fig. showing the example of use of the monitor and control equipment installed in the rack.

[0011] When carrying out supervisory control of the electronic equipment contained by the example network rack 3, such as a router and a server, it has the Ethernet communications department 4 and enables it to operate the network device contained in the rack 3 connected to the serial communication section 9 by remote control through the setting operation CPU section 5 of operation and the memory section 6 by operating a terminal 1 from the remote supervisory equipment put on the remote place.

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[0015] As shown in the drawing 3 front view and the drawing 4 rear view, components, such as various ports of the LED lamp display 10, an electric power switch, a fuse-holder, AC inlet, an analog input connector, a digital-input/output connector, and the port 11, COM port 12 and the Ethernet port 13 for a test, are arranged, and the example of this design is synthetically equipped with the equipment which carries out supervisory control of actuation and the environment of the aforementioned electronic equipment. Table 1 shows the diagnostic table of the foreground color of a monitor-and-control-equipment LED lamp.

[Table 1]

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TXD	緑 消灯	Ethernet パケット送信 Ethernet パケット送信無し
YXD	緑 消灯	Ethernet パケット受信 Ethernet パケット受信無し
COLLISION	赤 消灯	Ethernet コリジョン発生 Ethernet コリジョン無し
ALARM	赤 消灯	点灯イベント発生 (異常定義任意に可能) 消灯イベント発生

[0016] Even if this design is the place distant distantly [ rack / network ], it prepares the environment of a network rack simply by operating the keyboard of the terminal of remote supervisory equipment, maintains actuation of electronic equipment, prepares the best environment where electronic equipment operates, maintains the good environment, and prevents the system down of electronic equipment. Moreover, the electronic equipment contained in the rack is operated from a remote place, and it enables it to perform both hard restoration actuation like software for the device which carried out the system down.

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CLAIMS

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[Utility model registration claim]

[Claim 1] Monitor and control equipment in the network rack characterized by enabling it to maintain actuation and the good environment of the electronic equipment which consisted of the memory section required to perform the CPU section used as the Ethernet communications department and setting operation part of operation, and its function, the digital-input/output section, the analog input section, and the serial communication section, and were contained in the network rack.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] The functional block diagram showing the concept of the monitor and control equipment

[Drawing 2] The detail functional block diagram of the monitor and control equipment

[Drawing 3] The front view of the monitor and control equipment

[Drawing 4] Rear view of the monitor and control equipment in which arrangement of various components is shown

[Drawing 5] The typical system configuration Fig. showing the example of use of the monitor and control equipment installed in the rack

[Description of Notations]

1 ... the terminal of remote supervisory equipment

2 ... the monitor and control equipment

3 ... a network rack

4 ... the Ethernet communications department

5 ... the setting operation CPU section of operation

6 ... the memory section

7 ... the digital-input/output section

8 ... the analog input section

9 ... the serial communication section

10 ... an LED lamp

11 ... the port for a test

12 ... a COM port

13 ... the Ethernet port

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[Translation done.]